August Test Slated to Find Way To Divert or Dilute Hurricanes

By Howard Simons
Staff Reporter

Hurricane Donna, which last September ravaged the Nation's East Coast, killing 164 persons, may have provided scientists with a clue that will enable them to divert or dilute future hurricanes.

Late next month a flotilla of Weather Bureau research airplanes, assisted by Navy jet aircraft, will attempt to seed a relatively small cloud accumulation on the rim of a hurricane eye.

This seeding experiment is designed to treat the clouds with chemical compounds to convert supercooled liquid water into ice.

The cloud accumulation, to be seeded, which is called a convective cell, was found to have been the flue or stovepipe through which the energy that drove Donna was released.

The cell was located along the right front quadrant of a circle of clouds surrounding the hurricane center. It was relatively small, measuring some 15 miles wide and 30 to 40 miles long.

Sometime this summer, when a hurricane is located, the flying researchers will attempt to learn whether cloud-seeding techniques can change the pattern of energy release through this particular cell.

If seeding proves effective, two possibilities will be open to meteorologists determined to modify severe storms:

1. Changing the forces that govern the maximum winds around the hurricane eye through seeding this particular cell may momentarily divert a hurricane from its natural path.

2. Seeding the cell might cause the eye to rip into two or more storm centers, which might then "fight" one another, thereby causing internal friction that will dilute the hurricane's damaging winds.

This Weather Bureau project—part of the National Hurricane Research Program—represents the most nearly complete, controlled effort to evaluate the effects of cloud seeding on hurricanes.

Robert H. Simpson, deputy director of meteorological research for the Weather Bureau and director of the hurricane seeding project, cautions that the present effort "is not an attempt to deflect hurricanes, but will be useful in providing more information on the effects of seeding on hurricanes."

The cloud-seeding techniques to be tested involve silver iodide dispersal. As now scheduled, when a hurricane is spotted, four Weather Bureau research planes will sweep the hurricane and single out the key cell. When the cell is located, a monitor plane surveying the storm by airborne radar will contact high-flying jet aircraft.

The jets will circle the hurricane and drop newly developed silver iodide canisters. As these pods fall through the cell, they burn and generate smoke containing trillions of submicroscopic silver iodide particles.

Simultaneously, the four Weather Bureau planes will employ conventional silver iodide burners to disperse the

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particles below the cell, where the chemical particles will be swept upward.

The seeding project is being supported by the National Science Foundation, which is simultaneously supporting New York University study of the theory of hurricane modification. The hurricane-seeding project will complement this academic work, and what is learned from one project will help the other.

Hurricanes derive their power from a release of heat or energy either by converting water vapor to liquid water or water to ice. Previous hurricane studies have shown that the amount of energy being released can be altered. Scientists, however, still do not know whether they can cause enough energy to be released to make a difference in a storm's intensity. This is one of the questions to be resolved in the forthcoming seeding experiment.

Seek to Alter Forces

The flying weathermen will try to determine whether by converting water to ice they can release enough heat of fusion into the free atmosphere to alter the natural forces operating in the storm and thereby alter its intensity or its movement.

The lowering of pressure toward the center of a storm, which is responsible for the hurricane's winds, has been found to be controlled by the amount of heat concentrated at elevations above the freezing level, some 16,000 feet in hurricanes.

When water solidifies into ice by cooling latent heat of fusion is released. This type of heat would be potentially useful in altering the forces in the storm's lower layers that control the intensity of the winds.

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